

# ERP Update

May 2003



*This ERP Update provides information about the first known selective ion exchange treatability study for perchlorate at a CERCLA or Superfund law site.*

## Perchlorate treatment ready for real-world test



These four red vessels contain the resin that will adsorb the perchlorate from the contaminated groundwater during treatment.

**T**he selective ion exchange technology at Site 285 represents the first known full-scale treatability study of perchlorate contaminated groundwater at a CERCLA, or Superfund law site.

This technology had a successful pilot-study performance in the summer of 2001. During the study, it removed five times more perchlorate than two resins that were not selective for perchlorate.

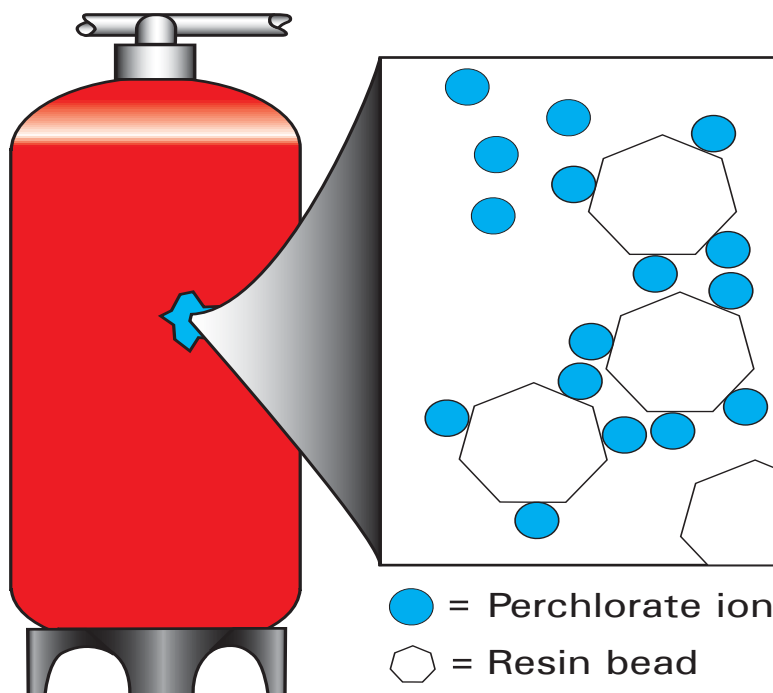
“Because we expect this technology to be effective, we hope to demonstrate its value in dealing with countless cleanup sites across the country where groundwater has been contaminated by perchlorate,” said Environmental Management (EM) project manager Paul Schiff.

The Air Force spent years in solid-fuel propellant development and rocket testing. This testing resulted in perchlorate contamination at Edwards. In addition to the plume at Site 285, perchlorate has been detected in groundwater at various other restoration sites at Edwards.

All the perchlorate contamination at Edwards is found in shallow groundwater that already contains high levels of naturally occurring total dissolved solids. No drinking water aquifers are threatened.

EM expects that this treatability study will last one to two years.

“This should be adequate to demonstrate the technology’s effectiveness,



When the contaminated groundwater comes into the resin vessel from above, the perchlorate ions will be adsorbed by the resin beads.

however, this isn't a certainty. The bottom line is, we need to run the system long enough to evaluate the various aspects from treatment to regeneration to perchlorate destruction," said Schiff.

Capital costs were approximately \$800,000 for installation of this site-specific treatment compound and components.

#### **Treatment system overview**

The selective ion exchange resin used in the treatability study works like a magnet. The magnet attracts or pulls out the perchlorate. When there's no more room on the surface of the magnet – it needs to be cleaned.

Resin adsorption — the process of the magnet pulling out a contaminant — uses bead-like synthetic polymers that are insoluble but porous. These resin beads look like hard plastic balls about the size of a pinhead. The waste stream

flows through the resin beds and the contaminant adsorbs onto the beads.

When a resin bed becomes saturated with perchlorate it must be regenerated. This is where perchlorate that attached to the surface of the resin beads is washed off to make the resin ready for reuse. The washing process uses a chemical solution to displace the perchlorate ions that are stuck to the exchange resin. This solution poses no harm and will be stored on site. It could also be reused. EM is currently pursuing a perchlorate destruction technology that would break down the perchlorate into the harmless byproducts of chloride and water.

So what's next? According to Schiff, "Once we are completed with system testing and evaluation, we'll develop a treatability study report that will detail how effective the technology is for real-world application. The report will also generate cost and design data for potential future applications of this technology."

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